Symmetry in Cosmology

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Message from the Guest Editor

Symmetries is perhaps the strongest tool of physics and applied mathematics available for the manipulation of differential equations and the determination of actual solutions. They provide two major elements of significant importance:

a.   The invariant quantities which constitute the best variables for the study of a specific dynamical system and can be used to reduce the order of a differential equation or reduce the number of variables.
b.   Conserved currents which define surfaces in phase space, on which the evolution of the differential equation is constrained and can be used for the determination of analytical solutions. …

In general, the field equations of a generalized cosmological model are nonlinear while new degrees of freedom and/or higher-order derivatives are introduced. The determination of analytical solutions as well as the study of integrability of those models is a subject of special interest.

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Special Issue

Editor-in-Chief

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Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

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